

## Claims

1. Method for monitoring a pulse charging valve (18) of an internal combustion engine with
  - 5 - a manifold (12), from which an induction pipe (13) leads to an intake of a cylinder (Z1 to Z4) of the internal combustion engine,
  - a gas intake valve (30), which is located at the intake of the cylinder (Z1 to Z4),
  - 10 - the pulse charging valve (18), which is located upstream from the gas intake valve (30) in the induction pipe (13) and releases or seals the induction pipe (13) as a function of its selected position, and
  - a pressure sensor (16), which is located in the induction
  - 15 duct (1) and detects an induction pipe pressure, characterized in that
  - the progression (MAP(t)) of the detected induction pipe pressure is compared with that of a reference induction pipe pressure, which characterizes a predetermined operating state
  - 20 of the pulse charging valve (18) and
  - an error is identified in the pulse charging valve as a function of the comparison.
2. Method according to claim 1,
  - 25 characterized in that
  - the operating state is suspension of the pulse charging valve (18) in its open position, suspension of the pulse charging valve (18) in its closed position and/or in its freely oscillating middle position.
  - 30
3. Method according to one of the preceding claims, characterized in that
- the progression (MAP(t)) of the detected induction pipe

pressure is compared with that of a reference induction pipe pressure in respectively over a cylinder segment of the internal combustion engine.

- 5    4.    Method according to one of the preceding claims,  
characterized in that  
the comparison is made on the basis of the frequency spectra  
(MAP(OMEGA), MAP\_REF(OMEGA)) of the progression of the  
detected induction pipe pressure and the reference induction  
10   pipe pressure.
5.    Method according to claim 4,  
characterized in that  
the frequency element(s) characterizing the operating state of  
15   the pulse charging valve (18) are compared.
6.    Method according to claim 5,  
characterized in that  
the frequency range of the natural oscillation of the pulse  
20   charging valve (18) is compared for an operating state of  
suspension of the pulse charging valve (18) in its freely  
oscillating middle position.
7.    Method according to one of claims 4 to 6,  
25   characterized in that  
the amplitudes of the frequency spectra are compared.
8.    Method according to claim 7,  
characterized in that  
30   the comparison is made as a function of the quadratic  
deviation of the amplitudes of the frequency spectra.

9. Method according to one of the preceding claims, characterized in that the comparison is made as a function of the speed (N) of the internal combustion engine.

5

10. Device for monitoring a pulse charging valve (18) of an internal combustion engine with

- a manifold (12), from which an induction pipe (13) leads to an intake of a cylinder (Z1 to Z4) of the internal combustion engine,
- a gas intake valve (30), which is located at an intake of the cylinder (Z1 to Z4),
- the pulse charging valve (18), which is located upstream from the gas intake valve (30) in the induction pipe (13) and releases or seals the induction pipe (13) as a function of its selected position, and
- a pressure sensor (16), which is located in the induction tract (1) and detects an induction pipe pressure, characterized in that
- 20 - first means are provided to compare the progression (MAP(t)) of the detected induction pipe pressure with that of a reference induction pipe pressure, which characterizes a predetermined operating state of the pulse charging valve (18) and
- 25 - second means are provided, which identify an error in the pulse charging valve (18) as a function of the comparison.